

## Wheat Gluten Acid Method

### Scope

- Assess gluten quality in flour.

### Rapid Visco Analyser

The Rapid Visco Analyser (RVA) is a cooking stirring viscometer with ramped temperature and variable shear profiles optimized for testing viscous properties. The instrument includes international standard methods as well as full flexibility for customer tailor-made profiles. Combining speed, precision, flexibility and automation, the RVA is a unique tool for product development, quality and process control and quality assurance.



### Description

The RVA can be used to assess the gluten quality in soft wheat flour. Gluten proteins increase suspension viscosity when dispersed in dilute lactic acid. This viscosity can be measured using the RVA. The method is most useful for assessing soft wheat used in pastry and biscuit manufacture. This method has limited screening value for bread making wheat where dough rheological properties are important.

The first 5 minutes of the test, a single temperature hold at 25°C, is similar to that of the MacMichael viscosity method. A similar method has been developed on the Brookfield viscometer. The RVA method reduces the amount of sample preparation time and effort required compared to the other two methods.

During the test the viscosity reaches a plateau, then when heated to 50°C the viscosity decreases. The viscosity at 3 minutes and the breakdown (percentage reduction in viscosity between 3 and 10 minutes) are useful indicators of product quality.

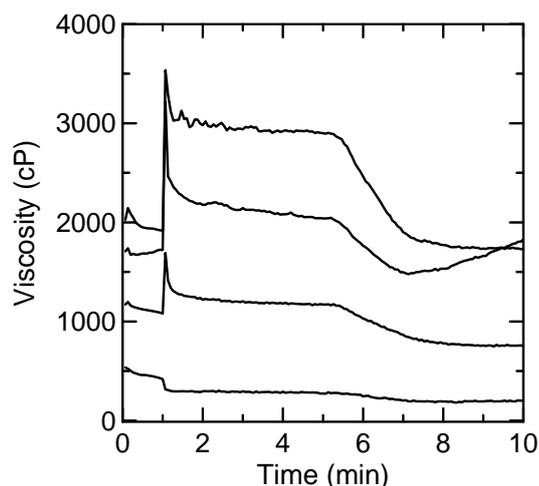


Fig. 1. RVA curves of four samples of wheat flour varying in protein quality.

## Method

Ten-minute profile.

## Sample Preparation

15.00 g sample (12% mb) flour, 22.5 ml distilled water. Cover with rubber stopper and shake vigorously for 10 sec. Add 2.50 ml of 1.0 M lactic acid.

## Profile

Time	Type	Value
00:00:00	Temp	25°C
00:00:00	Speed	1000 rpm
00:00:10	Speed	160 rpm
00:05:00	Temp	25°C
00:07:00	Temp	50°C
00:10:00	End	
Idle Temperature: 25 ± 1°C Time Between Readings: 4 s		

## Measure

V3: Viscosity at 3 min. (°C)      BD: Breakdown  $[100(FV - V3)/V3]$   
FV: Final viscosity (cP)

Calculate breakdown as the final (10.0 minute) viscosity minus the 3.0 minute viscosity, expressed as a percentage of the 3.0 minute viscosity. The viscosity at 3.0 minutes is the RVA soft wheat gluten index.

The test time may be reduced to 3 minutes if a breakdown value is not required. Repeatable viscosity values are reached by 3 minutes. This 3 minute viscosity test can be used in place of the MacMichael and Brookfield viscosity tests. Breakdown has been correlated with other standard measures of flour quality such as Farinograph and Extensograph values.